

REMARKS

The Examiner is thanked for the thorough Office action dated May 3, 2006. This amendment and request for reconsideration is made as a response thereto. This amendment is being filed concurrently with an Information Disclosure Statement and the fee required by 37 CFR 1.17(p).

By this amendment, claim 1 has been amended, withdrawn claims 31 to 34 and 36 to 40 have been cancelled, and new claims 41 to 48 have been added.

In the Office action, the Examiner rejected applicant's claims as being obvious in view of Popescu (US 5,635,717), or Popescu in view of Reed (US 5,313,065). Applicant respectfully traverses these rejections.

Popescu reveals a flexible, in-vivo radiation detecting apparatus in which a scintillating optical fiber is disposed within a jacket which is "very flexible and has a small diameter of a few millimeters... the end of which constitutes a manipulable probe" (column 2, lines 19 to 33. The scintillating fiber is attached to a PMT. In so far as this construction is concerned, it is identical to the construction of the "Scintillation Fiber Detector for In-Vivo Endoscopic Internal Dosimetry" described in NUREG/CR-5223 cited in the Information Disclosure Statement filed with this application on January 30, 2004.

Applicant's radiation detector is distinguished from these in-vivo flexible radiation detectors in that applicant's radiation

detector includes a scintillating fiber which is disposed within a substantially rigid tube. To make the opaque jacket 3 in Popescu substantially rigid would destroy his invention (see claim 1 where "an opaque flexible jacket" is claimed).

Referring now to claim 1, applicant has amended the claim to recite:

wherein the light intensity measuring device comprises a battery-powered photomultiplier tube attached to a first end of the substantially rigid opaque tube by a light-proof connection, wherein the coupling means comprises an adapter plate attached to the battery-powered photomultiplier tube and fitted within the first end of the substantially rigid opaque tube, wherein a light-proof cover is provided at a second end of the substantially rigid tube, and wherein the scintillating fiber is enclosed entirely within the substantially rigid opaque tube between the battery-powered photomultiplier tube and the light-proof cover.

Neither Popescu nor NUREG/CR-5223 disclose a battery-powered PMT attached to a first end of a substantially rigid opaque tube (page 11, lines 5 to 9 and 22), nor do they disclose that the scintillating fiber is enclosed entirely within the substantially rigid opaque tube between the battery-powered photomultiplier tube and a light-proof cover disposed at the second end of the substantially rigid opaque tube (page 12, lines 19 to 27).

Claim 13 recites that a cross-sectional dimension of the scintillating fiber is approximately 5 mm. It would not have been obvious to use a 5 mm cross-section scintillating fiber in the in-vivo flexible radiation detector of Popescu because it was well-known that scintillating fibers with 5 mm cross-sections (or even

with 2 mm or 3 mm cross-sections) do not have the requisite flexibility for such applications (page 17 and Table 3 of the NUREG/CR-5223 report specifically addresses this issue).

Claim 24 and 30 recite the use of a low-pass filter with a scintillating fiber radiation detector for homeland security. False-positive indications with a homeland security radiation detector can be particularly costly and have enormous implications (see page 1, lines 21 to 23). It is therefore necessary to eliminate, as much as possible, false-positive response from a scintillating fiber radiation detector for homeland security.

From applicant's original research, solar radiation spikes (including sun spots and solar flares) are the major source of fast, false-positive signals arising in high-sensitivity scintillating fiber radiation detectors (see e.g. page 31, lines 23 and 24). The issue of these fast, false-positive signals in high-sensitivity scintillating fiber radiation detectors has not been previously addressed to the best of applicant's knowledge. Applicant does not dispute that low-pass filters were known and they could have been used in radiation detectors to filter out high frequency response: that is exactly what applicant did, and applicant has solved a problem that has heretofore been unknown and unsolved, to the best of applicant's knowledge.

Applicant therefore requests that the rejection of claims 24 and 30 be withdrawn, or in the alternative, applicant requests a show of proof regarding the Examiner's allegation that it would have been obvious to use low-pass or RC circuit in the radiation


detector of Popescu. Applicant notes that Popescu is only interested in the level (magnitude) of the PMT pulse signals, and he already discards the low-level (magnitude) signals due to noise exhibited by the apparatus by making a comparison with a minimum reference voltage of 20 mV. (In making his comparison, Popescu makes no distinction between fast signals and slow signals; therefore, continuous low-level radiation signals which would be detected by applicant's homeland security detector are ignored by Popescu's detector.) Popescu considered the problem of background noise in his device and solved it to his own satisfaction without any low-pass filter. Furthermore, Popescu's solution, while suitable for a medical radiation detector, would not be advantageous for a homeland security detector which was being relied on to detect continuous low-level radiation emanating from a non-overt terrorist source. To suggest that Popescu's radiation detector *would have been modified* as the Examiner states is taught away from by Popescu's own disclosure. Applicant has solved the problem of fast, false-positive signals due to solar spikes by circuitry which is completely different (in structure, function, and result) from the circuitry taught by Popescu.

Regarding claims 4 to 7, applicant is claiming system structure, and it is improper for the Examiner to characterize structural elements (a support, an object travel path, a roadway, ramps, a vehicle) as intended use.

It is believed that this case is now in condition for allowance, and notice to that effect is earnestly solicited. In

the event that the Examiner discovers issues which warrant correction, he is invited to contact applicant's representative at the telephone number listed below.

Respectfully Submitted,
for Applicant



David A. Testardi, Reg. 33,639

1602 Belle View Blvd., PMB #700
Alexandria, VA 22307
Tel/Fax 703-765-3176